IMPROVED HEATING HEAD FOR A STOVE

The present invention relates to an improved heating head for a stove.

Various types of stoves are used in rooms with no fixed heating systems, normally consisting of distributed heating elements such as radiators.

These stoves are generally autonomously fed and can therefore be quite freely arranged in the rooms to be heated, with no particular restrictions.

There are, for example, wood stoves and electric, pellet and catalytic heaters.

A widely used feeding system is butane propane liquid gas LPG in cylinders, which normally feed catalytic panels or infrared burners.

In particular, so-called stoves for outdoor use are well known, suitable for also being used in large rooms for localized heating.

These stoves for outdoor use normally have a shape similar to a mushroom, as they include a supporting base which houses the LPG cylinder, axially connected to a heating head, or cap, through a stem which also contains the fuel feeding ducts.

The heating head includes, in the upper part, a circular, or other-shaped, portion with a reflecting lower part and a truncated conical surface consisting

of infrared burners.

The reflecting lower part prevents the infrared radiations from being dispersed upwards, whereas the stem allows the heating head to be positioned at an adjustable height, for example, two meters.

These outdoor stoves, however, have various drawbacks. In particular, a gust of wind can easily extinguish the flame of some burners, with gas release into the environment and consequently serious problems relating to safety.

Moreover, when the stove is placed against a wall, there is a sector of the truncated conical surface which heats up an area which is not utilized, with an evident waste of fuel.

An objective of the present invention is therefore to avoid the above-mentioned drawbacks and, in particular, to provide an improved heating head for a stove which preserves the flame even in the presence of gusts of wind.

Another objective of the present invention is to provide an improved heating head for a stove which allows the fuel consumption to be rationalized.

A further objective of the present invention is to provide an improved heating head for a stove, which is particularly reliable, simple, functional and at

relatively low costs.

These and other objectives, according to the present invention, are achieved by producing an improved heating head for a stove as disclosed in claim 1.

Further characteristics are exposed in the subsequent claims.

The characteristics and advantages of an improved heating head for a stove according to the present invention will appear more evident from the following description which is illustrative and in no way limitative, referring to the enclosed schematic drawings, wherein:

figure 1 is a raised side view of an improved heating head for a stove, according to the present invention;

figure 2 is a plan view from below of the heating head of figure 1;

figure 3 is a cross section view of the head of figure 1, in which an infrared burner is visible;

figure 4 is a raised side view of a stove which includes the heating head of figure 1;

figure 5 is a raised side view of the stove of figure 1, in a configuration for easy transportation;

figure 6 is a raised side view of another

embodiment of an improved heating head for a stove, according to the invention;

figure 7 is a plan view from below of a further embodiment of a heating head according to the invention.

With initial reference to figures 1, 2 and 3, an improved heating head for a stove is shown, indicated as a whole with the number 10.

In the example according to the present invention, the heating head 10 comprises a holding structure 12 for a series of radiating bodies 14, such as already known infrared burners.

The radiating bodies 14 are arranged along a circumference, preferably at the same distance from each other, or other configurations. For example, in figures 1, 2 and 3, the holding structure 12 carries six radiating bodies 14. The number of radiating bodies can obviously be different.

Each radiating body 14 can be fed individually, and the gas flow rate can consequently also be regulated; moreover, these bodies 14 can be reoriented, so that the infrared radiation can be better directed.

As an alternative, groups of radiating bodies 14 can be contemporaneously fed, with different configurations and with an adjustable flow rate. For

example, pairs of radiating bodies 14, positioned at an angle of 180°, can be fed, with six radiating bodies, in the example.

Figure 3 shows that the infrared burners comprise a ceramic surface 16 facing a flame-breaking chamber 18, where a flame is generated through a feeder 20 for the fuel, generally LPG.

The ceramic surfaces 16 of the radiating bodies 14 are tilted in order to direct the radiation, referring to the circumference on which said radiating bodies 14 are assembled, in the lower part and radially towards the outside.

The holding structure 12 has a truncated pyramidal or truncated conical shape, with the smaller base placed downwards.

The figures show that a radiating body 14 is positioned at each side of the truncated pyramid of the holding structure 12.

The heating head 10 comprises, in the upper part, a truncated conical portion 22, with the largest base below, and with a reflecting lower part, for conveying the radiations of the infrared burners downwards.

Figure 4 shows an outdoor stove, indicated as a whole, by the number 30, and comprising the heating head 10 according to the present invention.

The stove includes a base 32 and a stem 34, to whose top the heating head 10 of the present invention is fixed.

A cylindrical structure 36 is preferably situated above the base 32, which can be opened, for example, by means of a door, wherein a normal LPG cylinder 38 is inserted.

The cylinder 38 is connected to a control panel 42 with a gas tube 40, passing inside the stem 34, which is hollow and arranged axially with respect to the oven 30.

The control panel 42 in the example illustrated is situated along the stem 34, in an intermediate position between the cylindrical structure 36 and the heating head 10. The same control panel 42 can also be situated below at the base of the stem 34 or in a specific space on an upper part of the cylindrical structure 36 of the supporting base 32.

Gas ducts 44 connected to the feeding 20 of each radiating body 14 or group of radiating bodies 14, leave the control panel 42, said ducts 44 always passing inside the stem 34. Figure 4 shows three ducts 44 connected to three pairs of radiating bodies 14.

The functioning of the heating head 10 according to the invention is evident from the above description

with reference to the figures and is briefly as follows.

The radiating bodies 14 are switched on by acting on the control panel 42, which in the example of figure 4, is particularly simple and with immediate functioning.

Three switches 46 are envisaged, whereby the three pairs of radiating bodies 14 shown in figure 4, are switched on separately. The greater the number of radiating bodies 14, the greater the number of switches 46.

Each switch 46 contemporaneously activates three push buttons: one operates on the feeding of gas to one of the burners connected, the second push button activates the second burner connected and the third causes ignition for lighting up the two burners.

It should be pointed out that the control panel 42 can consist of mechanical components, but is also run with the use of an electronic card.

A simple pressure on the switches 46 is therefore sufficient for completely lighting the stove 30.

As already mentioned, in the case of figure 4, there are a total of six burners present, subdivided into three pairs: each pair of burners is independent with respect to the others, thus allowing the partial

use of the stove 30 by lighting only a part of the radiating bodies 14, and consequently reducing consumption, when necessary.

It should also be noted that infrared burners allow the heat distribution potential to be fully exploited: the temperature expansion radius is in fact extremely vast and heats not only the areas near the stove 30, but also more distant areas.

The stove 30, and in particular the control panel 42, also comprises a battery igniter to generate the igniting spark for lighting the chambers 18 of the radiating bodies 14.

Figure 5 shows how the stove 30 can be dismantled and compacted, for example for transportation. Once the cylinder 38 has been removed from the cylindrical structure 36, and the control panel 42 disconnected from the stem 34, the stem 34 itself is inserted inside the cylindrical structure 36, by sliding it axially into a hole situated above the cylindrical structure 36. The heating head 10, which is solidal with the stem 34, remains outside and above the cylindrical structure 36.

The control panel 42, disconnected from the tube 40 and ducts 44, is arranged inside the cylindrical structure 36.

As far as safety is concerned, the stove 30 is preferably equipped, as a safety measure, with a thermocouple for each burner. Each thermocouple intervenes by possibly closing a gas tap which feeds each radiating body 14: in this way, the closing of a tap does not prevent the other burners from continuing to function.

In order to facilitate the moving of the stove 30, it is also possible to equip the supporting base 32 with wheels. The length of the stem 34 can be obtained in relation to the clients' demands.

It should also be noted that, whereas with current outdoor stoves the heating covers a radius of about 3 m around the stove, experimental tests with the heating heads of the present invention have demonstrated a radius coverage of about 5 m. Furthermore, if the radiating bodies are equipped with fans 50, said radius is further increased.

Said fans 50 can be assembled in correspondence with each radiating body 14, for example below or above it, as can be seen in figure 6: the fans 50 are preferably fed by a battery and allow the infrared radiations to be directed to a greater distance. The battery can be the same as that used for igniting the burners.

The fans 50 have a grid on the air inlet and are driven by the control panel 42, also in a partialized way. In this way, each radiating body 14 can have, together with the ignition push button, a regulation screw of the gas flow and a regulation screw of the rotation rate of the fan 50.

These fans 50 can also be exploited as means for dispersing essences or perfumes in the environment for aromatizing the environment itself.

The truncated conical portion 22 of the heating head can also be substituted by separate lower reflecting surfaces 48, which are oval-shaped, for example. These can be more easily transported with respect to the truncated conical portion 22; if, for example, the reflecting surfaces 48 are petal-shaped, as shown in figure 7, they can be easily dismantled and superimposed to facilitate transportation.

The characteristics of the improved heating head for a stove, object of the present invention, are evident from the above description, as also the relative advantages, among which the following should be remembered:

- more uniform heat distribution in relation to the distance and greater irradiation, as a result of the infrared technology;

- longer duration with respect to current techniques, with more limited maintenance operations;
- simple and reliable use;
- improved safety degree with respect to the known art;
- rationalized consumptions, due to the possibility of partializing the use of the infrared burners.

Finally, numerous modifications and variants can obviously be applied to the improved heating head for a stove thus conceived, all falling within the scope of the invention; furthermore all the details can be substituted by technically equivalent elements. In practice, the materials used, as also the forms and dimensions can vary according to technical demands.

The protection scope of the invention is therefore defined by the enclosed claims.